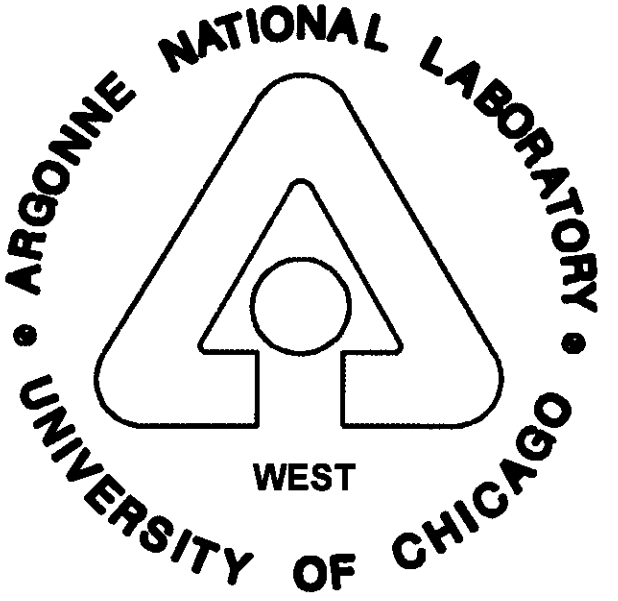
WAG 9

APPENDIX H

ANL-W GROUNDWATER SAMPLE RESULTS

for OPERABLE UNIT 9-04: COMPREHENSIVE RI/FS FINAL WORK PLAN



Prepared By
Argonne National Laboratory-West

Data Limitations and Validation Report

Lockheed Idaho Technologies

SDG 93111107

Argonne National Laboratory - West

Semivolatile Organic Compounds

One Aqueous Sample

Validated by:

Anne K. Battista 3-8-96

Anne K. Battista
Data Validator

Approved by:

3-8-96

Joseph A. Samchuck
Data Validation Quality
Assurance Officer

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1.0 INTRODUCTION

The Argonne National Laboratory - West sample set for Case No.93111107, SDG 93111107 consists of one aqueous sample analyzed for Target Compound List (TCL) semivolatile organic compounds. All analyses were conducted using SW-846 Method 8270 analytical and reporting protocols. The analyses were performed by the Biospherics Laboratory using the protocols outlined in the ANL-West SOW. The data were reported as a Level IV analysis. A Level A validation was performed on the samples in this SDG. A total of 64 sample data points were reported in this analytical data set.

The analytical data from these analyses were reviewed by HALLIBURTON NUS Corporation personnel in accordance with ERP Standard Operating Procedure SMO-SOP-12.1.3.

2.0 QUALITY CONTROL SUMMARY

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- GC/MS Tuning and Mass Calibration
- Initial and Continuing Calibrations
- * Blank Analyses
- * Surrogate Spike Recoveries
- Blank Spike Results
- Internal Standards Performance
- * System Performance and Detection Limits
- * Compound Identification
- * Compound Quantitation

The asterisk indicates that all quality control criteria were met for this parameter. Problem areas affecting data usability are discussed in Section 4.0 of this report. A Glossary of Data Validation Flags which defines the validation qualifiers applied on a sample-specific basis is presented in Section 6.0.

3.0 DATA COMPLETENESS

The data presented in Case No. 93111107, SDG 93111107 consists of semivolatile organic results for one (1) aqueous sample as follows:

ANL-260-93-4(93111107-10)

The data package was incomplete as submitted. Chain of custody forms were not provided. Initial calibration Form VIs and their corresponding DFTPP Form Vs were not contained in the data package. Presentation and documentation of the data package deliverables were extremely poor. The data package does not conform to a Level A deliverable. Notable omissions of forms include: an incorrectly transcribed Form V from 11/18/93, incorrect Form IIs, and an incorrect Form VIII.

4.0 SUMMARY OF DATA USABILITY

It should be noted that a chain of custody form for the sample contained in this SDG was not provided. However, an Analysis Bench Sheet was provided with the date of sample collection. The sample was extracted grossly outside of the semivolatile 7 day holding time. As a result of this gross exceedence nondetected results were considered unreliable and were rejected, (R), in the affected sample.

The DFTPP tuning Form V from 11/18/93 contained Percent Relative Abundance information which was incorrect. Based on the raw data, the data reviewer has amended the appropriate forms. No further action was taken.

A continuing calibration Percent Difference (%D) greater than 50% was reported for benzo(g,h,i)perylene. Positive and nondetected results are affected by this noncompliance. No action was taken, however, since the nondetected result for this compound was qualified for a more severe noncompliance.

Continuing calibration %Ds greater than 25% were reported for bis(2-chloroethoxy)methane, indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene. Positive results only are affected by these noncompliances. No action was taken since no positive results were reported.

It should be noted that the laboratory failed to report Percent Recoveries (%Rs) correctly on the surrogate recovery Form II for the sample contained in this SDG. A preliminary surrogate report was available for this sample which reported the correct information. The data reviewer has amended Form II. All %Rs for the surrogates were within quality control limits.

High %Rs were reported for N-nitroso-di-n-propylamine and 2,4-dinitrotoluene in the blank spike sample. No action was taken since no positive results were reported for these compounds in the affected sample and nondetected results are not compromised by this noncompliance.

It should be noted that the laboratory reported the 12 hour internal standard areas both upper and lower limits, for all six semivolatile internal standards incorrectly. Based on the raw data, the data reviewer has amended the appropriate forms. All internal standard areas were compliant.

Annotated laboratory Form I data summary reports showing the data and relevant qualifier flags applied are presented in Appendix A of this report. Copies of the unqualified data summary reports as reported by the laboratory are provided in the attached Appendix B. The attached Appendix C includes documentation to support the findings discussed in this report.

TABLE 1

LOCKHEED IDAHO TECHNOLOGIES

Case No. 93111107, SDG 93111107

SEMIVOLATILE ORGANIC COMPOUNDS

Sample No.	Qualifier Flags
ANL-260-93-4(93111107-10)	R[1]

[1] See Section 6.0 Glossary of Data Validation Flags for qualifier flag definitions.

A sample-specific summary of the data validation flags applied is depicted in Table 1, appearing on the previous page. The qualifier flags used as a result of the validation process are defined in Section 6.0 (Glossary of Data Validation Flags) of this report. Details regarding the application of the validation qualifiers are discussed in the remainder of this section.

4.1 Holding Times

It should be noted that a chain of custody form for the sample contained in this SDG was not provided. However, an Analysis Bench Sheet was provided with the date of sample collection. The sample was extracted grossly outside of the semivolatile 7 day holding time. As a result of this gross exceedence nondetected results were considered unreliable and were rejected, (R), in the affected sample.

4.2 GC/MS Tuning

The DFTPP tuning Form V from 11/18/93 contained Percent Relative Abundance information which was incorrect. Based on the raw data, the data reviewer has amended the appropriate forms. No further action was taken.

4.3 Calibrations

The continuing calibration performed on instrument GC/MS: B (11/18/93) at 08:48 contained the following %D which failed to meet the 50% quality control criterion:

Compound	%D
Benzo(g,h,i)perylene	58.1

Affected Sample: ANL-260-93-4

Positive and nondetected results are affected by this noncompliance. No action was taken, however, since the nondetected result for this compound was qualified for a more severe noncompliance.

The continuing calibration performed on instrument GC/MS: B (11/18/93) at 08:48 contained the following %Ds which failed to meet the 25% quality control criterion:

Compound	%D
Bis(2-chloroethoxy)methane	27.9
Indeno(1,2,3-cd)pyrene	32.4
Dibenz(a,h)anthracene	36.6

Affected Sample: ANL-260-93-4

Positive results only are affected by these noncompliances. No action was taken since no positive results were reported.

4.4 Surrogate Recoveries

It should be noted that the laboratory failed to report Percent Recoveries (%Rs) correctly on the surrogate recovery Form II for the sample contained in this SDG. A preliminary surrogate report was available for this sample which reported the correct information. The data reviewer has amended Form II. All %Rs for the surrogates were within quality control limits.

4.5 Blank Spike Results

High %Rs were reported for N-nitroso-di-n-propylamine and 2,4-dinitrotoluene in the blank spike sample. No action was taken since no positive results were reported for these compounds in the affected sample and nondetected results are not compromised by this noncompliance.

4.6 Internal Standard Areas

It should be noted that the laboratory reported the 12 hour internal standard areas, both upper and lower limits, for all six semivolatile internal standards incorrectly. Based on the raw data, the data reviewer has amended the appropriate forms. All internal standard areas were compliant.

4.7 Additional Comments

It should be noted that the detection limits on the laboratory Form Is may be incorrect. The detection limits may be low by a factor of two since only 500 ml were extracted instead of the method indicated amount of 1000 ml.

5.0 SUMMARY OF LABORATORY PERFORMANCE

Chain of custody forms and laboratory Form Vs and VIs were not contained in the data package. Sample ANL-260-93-4 was extracted grossly outside of the semivolatile 7 day holding time. The laboratory Form V from 11/18/93 was incorrectly reported. A continuing calibration %D greater than 50% was reported for benzo(g,h,i)perylene. Continuing calibration %Ds greater than 25% were reported for bis(2-chloroethoxy)methane, indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene. The laboratory failed to report %Rs correctly on the surrogate recovery Form II for the sample contained in this SDG. High %Rs were reported for N-nitroso-di-n-propylamine and 2,4-dinitrotoluene in the blank spike sample. The laboratory reported the 12 hour internal standard areas, both upper and lower limits, for all six semivolatile internal standards incorrectly.

6.0 GLOSSARY OF DATA VALIDATION FLAGS

The following data validation flags were applied to the sample data for reasons detailed previously in this report:

R^1 - Reject, (R), nondetected results as a result of a gross holding time exceedence.

7.0 REFERENCES

The data referenced in this report were validated in accordance with the protocols outlined in ERP Standard Operating Procedure SMO-SOP-12.1.3 as presented in ERP-SOW-37. In addition, details stipulating laboratory procedures as outlined in the ANL-West SOW were referenced.

APPENDIX A

QUALIFIED LABORATORY RESULTS

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ANL-260-93-4

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93111107 Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: 93111107-10

Sample wt/vol: 500 (g/mL) mL Lab File ID: >CH289::Z3

Level: (low/med) LOW Date Received: 10/13/93

% Moisture: 0 decanted:(Y/N) N Date Extracted: 11/12/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/18/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) N pH: ______

NB 3-1-96

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		Q
108-95-2- - - - - - -	Phenol	10	U R
111-44-4- - - - - - -	bis(2-Chloroethyl)ether	10	U
95-57-8- - - - - - - -	2-Chlorophenol	10	U
541-73-1- - - - - - -	1,3-Dichlorobenzene	10	U
106-46-7- - - - - - -	1,4-Dichlorobenzene	10	U
95-50-1- - - - - - - -	1,2-Dichlorobenzene	10	U
95-48-7- - - - - - - -	2-Methylphenol	10	U
108-60-1- - - - - - -	2,2'-oxybis(1-Chloropropane)		NR
106-44-5- - - - - - -	4-Methylphenol	10	U R
621-64-7- - - - - - -	N-Nitroso-di-n-propylamine	10	U
67-72-1- - - - - - - -	Hexachloroethane	10	U
98-95-3- - - - - - - -	Nitrobenzene	10	U
78-59-1- - - - - - - -	Isophorone	10	U
88-75-5- - - - - - - -	2-Nitrophenol	10	U
105-67-9- - - - - - -	2,4-Dimethylphenol	10	U
111-91-1- - - - - - -	bis(2-Chloroethoxy)methane	10	U
120-83-2- - - - - - -	2,4-Dichlorophenol	10	U
120-82-1- - - - - - -	1,2,4-Trichlorobenzene	50	U
91-20-3- - - - - - - -	Naphthalene	10	U
106-47-8- - - - - - -	4-Chloroaniline	10	U
87-68-3- - - - - - - -	Hexachlorobutadiene	50	U
59-50-7- - - - - - - -	4-Chloro-3-methylphenol	10	U
91-57-6- - - - - - - -	2-Methylnaphthalene	50	U
77-47-4- - - - - - - -	Hexachlorocyclopentadiene	10	U
88-06-2- - - - - - - -	2,4,6-Trichlorophenol	10	U
95-95-4- - - - - - - -	2,4,5-Trichlorophenol	10	U
91-58-7- - - - - - - -	2-Chloronaphthalene	10	U
88-74-4- - - - - - - -	2-Nitroaniline	10	U
131-11-3- - - - - - -	Dimethylphthalate	10	U
208-96-8- - - - - - -	Acenaphthylene	10	U
606-20-2- - - - - - -	2,6-Dinitrotoluene	10	U
99-09-2- - - - - - - -	3-Nitroaniline	10	U
83-32-9- - - - - - - -	Acenaphthene	50	U
		10	U

OLM02.0

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ANL-260-93-4

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93111107 Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 93111107-10

Sample wt/vol: 500 (g/mL) mL Lab File ID: >CH289::Z3

Level: (low/med) LOW Date Received: 10/13/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 11/12/93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/18/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) _____ pH: _____

AMB 3-1-94

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10 U	R
100-02-7	4-Nitrophenol	10 U	
132-64-9	Dibenzofuran	10 U	
121-14-2	2,4-Dinitrotoluene	10 U	
84-66-2	Diethylphthalate	10 U	
7005-72-3	4-chlorophenyl-phenylether	10 U	
86-73-7	Fluorene	10 U	
100-01-6	4-Nitroaniline	10 U	
534-52-1	4,6-Dinitro-2-methylphenol	10 U	
86-30-6	N-Nitrosodiphenylamine (1)	10 U	
101-55-3	4-Bromophenyl-phenylether	10 U	
118-74-1	Hexachlorobenzene	10 U	
87-86-5	Pentachlorophenol	10 U	
85-01-8	Phenanthrene	10 U	
120-12-7	Anthracene	10 U	
86-74-8	Carbazole	10 U	
84-74-2	Di-n-butylphthalate	10 U	
206-44-0	Fluoranthene	10 U	
129-00-0	Pyrene	10 U	
85-68-7	Butylbenzylphthalate	10 U	
91-94-1	3,3'-Dichlorobenzidine	10 U	
56-55-3	Benzo(a)anthracene	10 U	
218-01-9	Chrysene	10 U	
117-81-7	bis(2-Ethylhexyl)phthalate	10 U	
117-84-0	Di-n-octylphthalate	10 U	
205-99-2	Benzo(b)fluoranthene	10 U	
207-08-9	Benzo(k)fluoranthene	10 U	
50-32-8	Benzo(a)pyrene	10 U	
193-39-5	Indeno(1,2,3-cd)pyrene	10 U	
53-70-3	Dibenz(a,h)anthracene	10 U	
191-24-2	Benzo(g,h,i)perylene	10 U	

(1) - Cannot be separated from Diphenylamine

Data Limitations and Validation Report

Lockheed Idaho Technologies

SDG 93102505

Argonne National Laboratory - West

Semivolatile Organic Compounds

Two Aqueous Samples

Validated by:

Anne K. Battista 3-8-96

Anne K. Battista
Data Validator

Approved by:

13-8-96

Joseph A. Samchuck
Data Validation Quality
Assurance Officer

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1.0 INTRODUCTION

The Argonne National Laboratory - West sample set for Case No., SDG 93102505 consists of two aqueous samples analyzed for Target Compound List (TCL) semivolatile organic compounds. All analyses were conducted using SW-846 Method 8270 analytical and reporting protocols. The analyses were performed by the Biospherics Laboratory using the protocols outlined in the ANL-West SOW. The data were reported as a Level IV analysis. A Level A validation review was performed on the samples in this SDG. A total of 128 sample data points were reported in this analytical data set.

The analytical data from these analyses were reviewed by HALLIBURTON NUS Corporation personnel in accordance with ERP Standard Operating Procedure SMO-SOP-12.1.3.

2.0 QUALITY CONTROL SUMMARY

The data were evaluated based on the following parameters:

	Data Completeness
*	Holding Times
	GC/MS Tuning and Mass Calibration
	Initial and Continuing Calibrations
*	Blank Analyses
*	Surrogate Spike Recoveries
	Matrix Spike/Matrix Spike Duplicate Results
	Internal Standards Performance
	System Performance and Detection Limits
*	Compound Identification
*	Compound Quantitation

The asterisk indicates that all quality control criteria were met for this parameter. Problem areas affecting data usability are discussed in Section 4.0 of this report. A Glossary of Data Validation Flags which defines the validation qualifiers applied on a sample-specific basis is presented in Section 6.0.

3.0 DATA COMPLETENESS

The data presented in Case No. 93102505, SDG 93102505 consists of semivolatile organic results for two (2) aqueous samples as follows:

ANL-226-93-4(93102505-17) ANL-239-93-3(93102505-19)

The data package was incomplete as submitted. Chain of custody forms were not provided. An initial calibration Form VI and the corresponding DFTPP Form V, were not contained in the data package. Presentation and documentation of the data package deliverables were extremely poor. The data package does not conform to a Level A deliverable. Laboratory Form IIs, IVs, Vs and VIIIs were not fully completed and in some cases incorrectly completed.

4.0 SUMMARY OF DATA USABILITY

It should be noted that a chain of custody form for the sample contained in this SDG was not provided. However, an Analysis Bench Sheet was provided with the date of sample collection. The sample was extracted and analyzed with the semivolatile holding requirements. No further action was taken.

The DFTPP Form V from 11/01/93 was not filled out correctly. A Percent Relative Abundance was incorrectly transcribed. Based on the raw data, the data reviewer has amended the appropriate form.

Initial calibration information from 10/29/93 was omitted from the data package. Therefore, it is not possible to assess data quality for this parameter.

The continuing calibration Form VII from 11/01/93 correctly recorded. Copies of this calibration contained in the data package were illegible. Continuing calibration Percent Differences (%Ds) greater than 25% were reported for 4-nitrophenol, di-n-butylphthalate, fluoranthene, pyrene, 3,3-dichlorobenzidine, benzo(k)fluoranthene and benzo(a)pyrene. Positive results only are affected by these noncompliances. No action was taken since no positive results were reported for the aforementioned compounds in the affected samples.

It should be noted that the Blank Summary Form IVs were incorrectly reported.

It should be noted that the laboratory failed to report Percent Recoveries (%Rs) on the surrogate recovery Form II for the samples contained in this SDG. Also, the matrix spike and blank spike samples have incorrect recoveries reported on the Form II. A preliminary surrogate report was available for the samples which reported the correct information. The data reviewer has amended the Form II. All %Rs for the surrogates were within quality control limits.

It should be noted that the laboratory failed to report the areas of all six semivolatile internal standards for the samples contained in this SDG. An internal standard check report was provided in the raw data for each sample. Therefore, the data reviewer has amended the appropriate forms.

Annotated laboratory Form I data summary reports showing the data and relevant qualifier flags applied are presented in Appendix A of this report. Copies of the unqualified data summary reports as reported by the laboratory are provided in the attached Appendix B. The attached Appendix C includes documentation to support the findings discussed in this report.

TABLE 1*

LOCKHEED IDAHO TECHNOLOGIES

Case No. 93102505, SDG 93102505

SEMIVOLATILE ORGANIC COMPOUNDS

Sample No.	Qualifier Flags
ANL-226-93-4(93102505-17)	
ANL-239-93-3(93102505-19)	

* See Section 6.0 Glossary of Data Validation Flags for qualifier flag definitions.

A sample-specific summary of the data validation flags applied is depicted in Table 1, appearing on the previous page. The qualifier flags used as a result of the validation process are defined in Section 6.0 (Glossary of Data Validation Flags) of this report. Details regarding the application of the validation qualifiers are discussed in the remainder of this section.

4.1 Holding Times

It should be noted that a chain of custody form for the sample contained in this SDG was not provided. However, an Analysis Bench Sheet was provided with the date of sample collection. The samples were extracted and analyzed within the semivolatile holding requirements. No further action was taken.

4.2 GC/MS Tuning

The DFTPP Form V from 11/01/93 was not filled out correctly. A Percent Relative Abundance was incorrectly transcribed. Based on the raw data, the data reviewer has amended the appropriate form.

4.3 Calibrations

Initial calibration information from 10/29/93 was omitted from the data package. Therefore, it is not possible to assess data quality for this parameter.

The continuing calibration performed on instrument GC/MS: B (11/01/93) at 11:45 contained the following %Ds which failed to meet the 25% quality control criterion:

Compound	%D
4-Nitrophenol	31.1
Di-n-butylphthalate	25.6
Fluoranthene	28.9
Pyrene	30.8
3,3'-Dichlorobenzidine	27.7
Benzo(k)fluoroanthene	28.7
Benzo(a)pyrene	27.9

Affected Sample: ANL-226-93-4(93102505-15), ANL-239-93-3(93102505-19)

Positive results only are affected by these noncompliances. No action was taken since no positive results were reported.

4.4 Surrogate Recoveries

It should be noted that the laboratory failed to report %Rs on the surrogate recovery Form II for the samples contained in this SDG. Also, the matrix spike and blank spike samples have incorrect recoveries reported on the Form II. A preliminary surrogate report was available for the samples which reported the correct information. The data reviewer has amended the Form II. All %Rs for the surrogates were within quality control limits.

4.5 Internal Standard Areas

It should be noted that the laboratory failed to report the areas of all six semivolatile internal standards for the samples contained in this SDG. An internal standard check report was provided in the raw data for each sample. Therefore, the data reviewer has amended the appropriate forms.

4.6 Additional Comments

It should be noted that the detection limits on the laboratory Form Is may be incorrect. The detection limits may be low by a factor of two since only 500 ml were extracted instead of the method indicated amount of 1000 ml.

5.0 SUMMARY OF LABORATORY PERFORMANCE

Chain of custody forms and laboratory Form Vs and VIs were not contained in the data package. Continuing calibration %Ds greater than 25% were reported for several compounds. The laboratory failed to report %Rs on the surrogate recovery Form II for the samples contained in this SDG. Also, the matrix spike and blank spike samples have incorrect recoveries reported on the Form II. It should be noted that the laboratory failed to report the areas of all six semivolatile internal standards for the samples contained in this SDG.

6.0 GLOSSARY OF DATA VALIDATION FLAGS

The following data validation flags were applied to the sample data for reasons detailed previously in this report:

The data were accepted without qualification.

7.0 REFERENCES

The data referenced in this report were validated in accordance with the protocols outlined in ERP Standard Operating Procedure SMO-SOP-12.1.3 as presented in ERP-SOW-37. In addition, details stipulating laboratory procedures as outlined in the ANL-West SOW were referenced.

APPENDIX A

QUALIFIED LABORATORY RESULTS

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER: ANL-226-93-4

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93102505 Case No.: _____ SAS No.: _____ SDG No.: ____

Matrix: (soil/water) WATER Lab Sample ID: 93102505-15

Sample wt/vol: 500 (g/mL) ML Lab File ID: >CH144::Z2

Level: (low/med) LOW Date Received: 10/25/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10-27-93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/01/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)		NR
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	50	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	50	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER: ANL-239-93-3

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93102505 Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 93102505-15

Sample wt/vol: 500 (g/mL) ML Lab File ID: >CH139::Z2

Level: (low/med) LOW Date Received: 10/25/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10-27-93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/01/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) N pH: _____

11/2/93

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole		NR
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER

ANL-239-93-3

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93102505 Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: 93102505-19

Sample wt/vol: 500 (g/mL) ML Lab File ID: >CH144::Z2

Level: (low/med) LOW Date Received: 10/25/93

% Moisture: 0 decanted:(Y/N) N Date Extracted: 10-27-93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/01/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) N pH: ______

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND	ug/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)		NR
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	50	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	50	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	50	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER: ANL-239-93-3

Lab Name: BIOSPHERICS Contract: ARGONNE NAT LAB

Lab Code: 93102505 Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 93102505-19

Sample wt/vol: 500 (g/mL) ML Lab File ID: >CH144::Z2

Level: (low/med) LOW Date Received: 10/25/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 10-27-93

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/01/93

Injection Volume: 1 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
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95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)		NR
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
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83-32-9	Acenaphthene	10	U